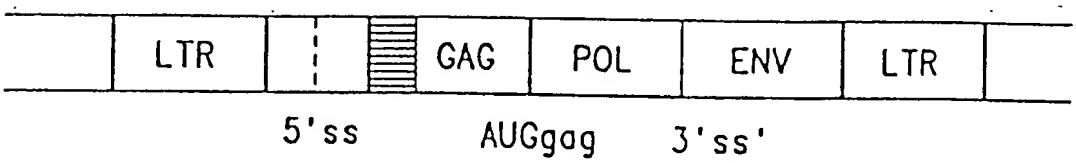


FIG. 1

FIG. 2A pLJ

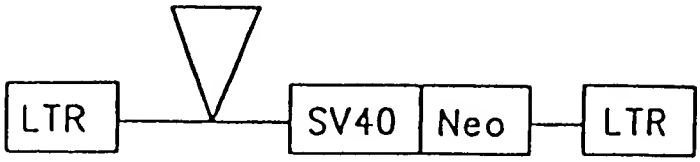


FIG. 2B pEm

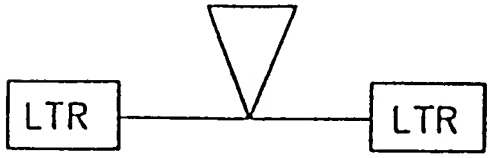


FIG. 2C MFG

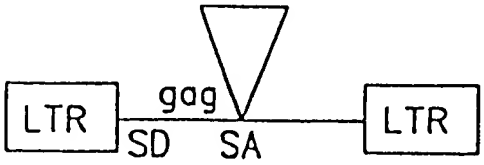
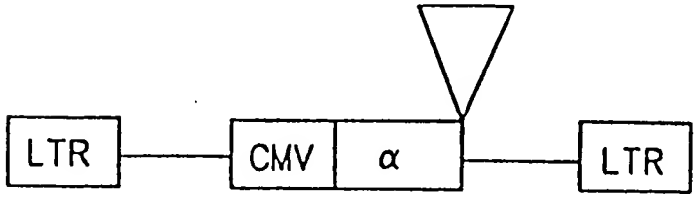


FIG. 2D αSGC



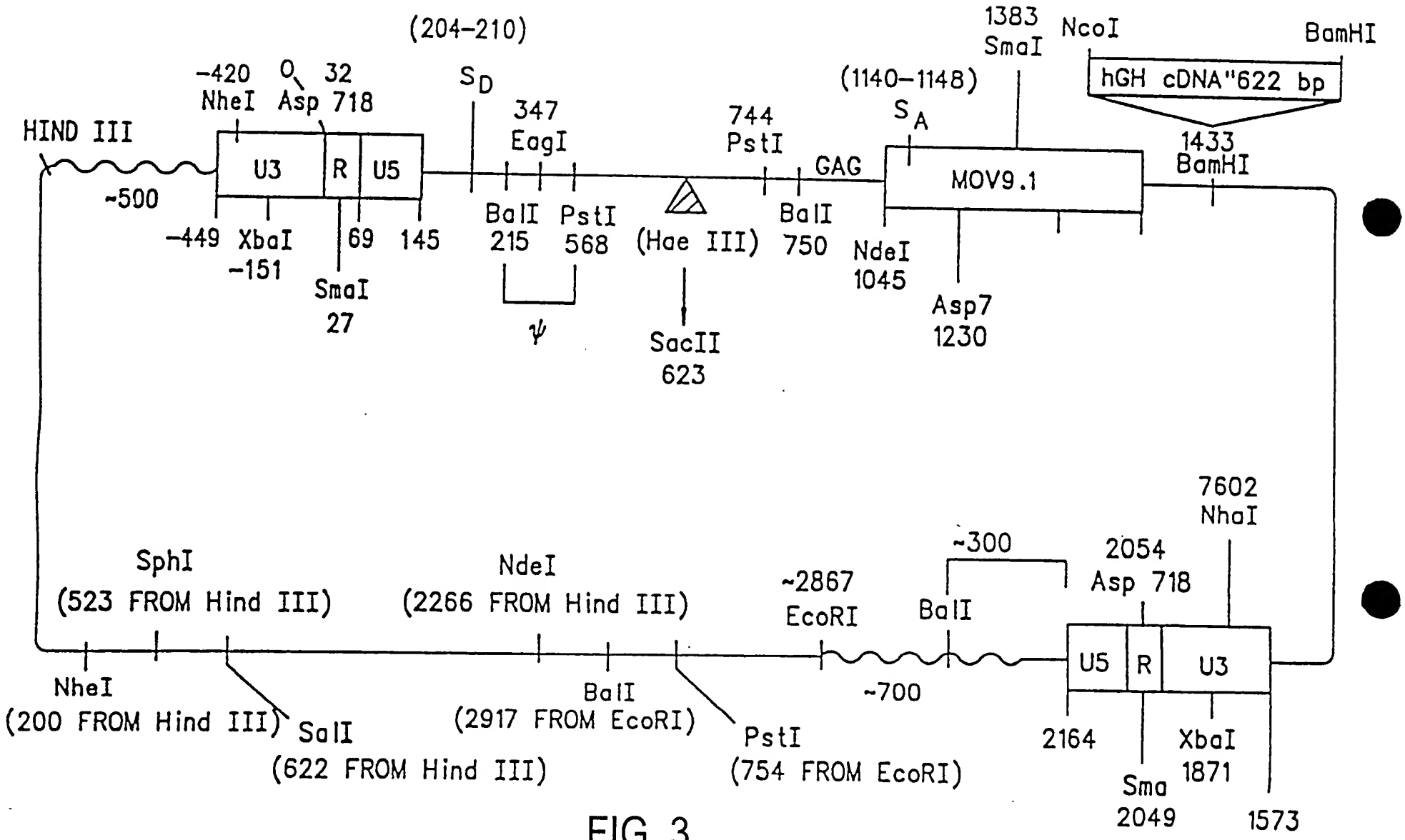


FIG. 3

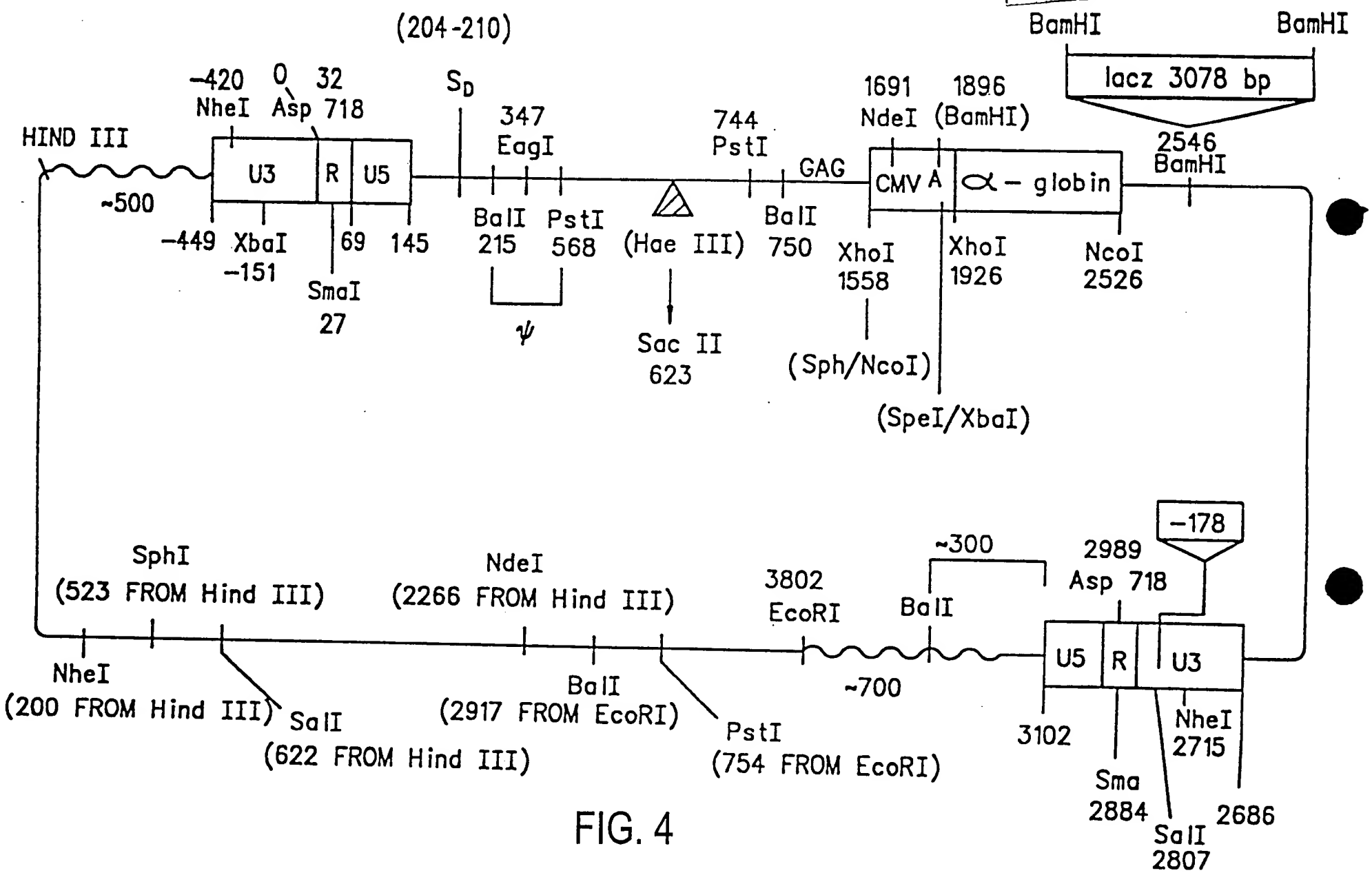


FIG. 4

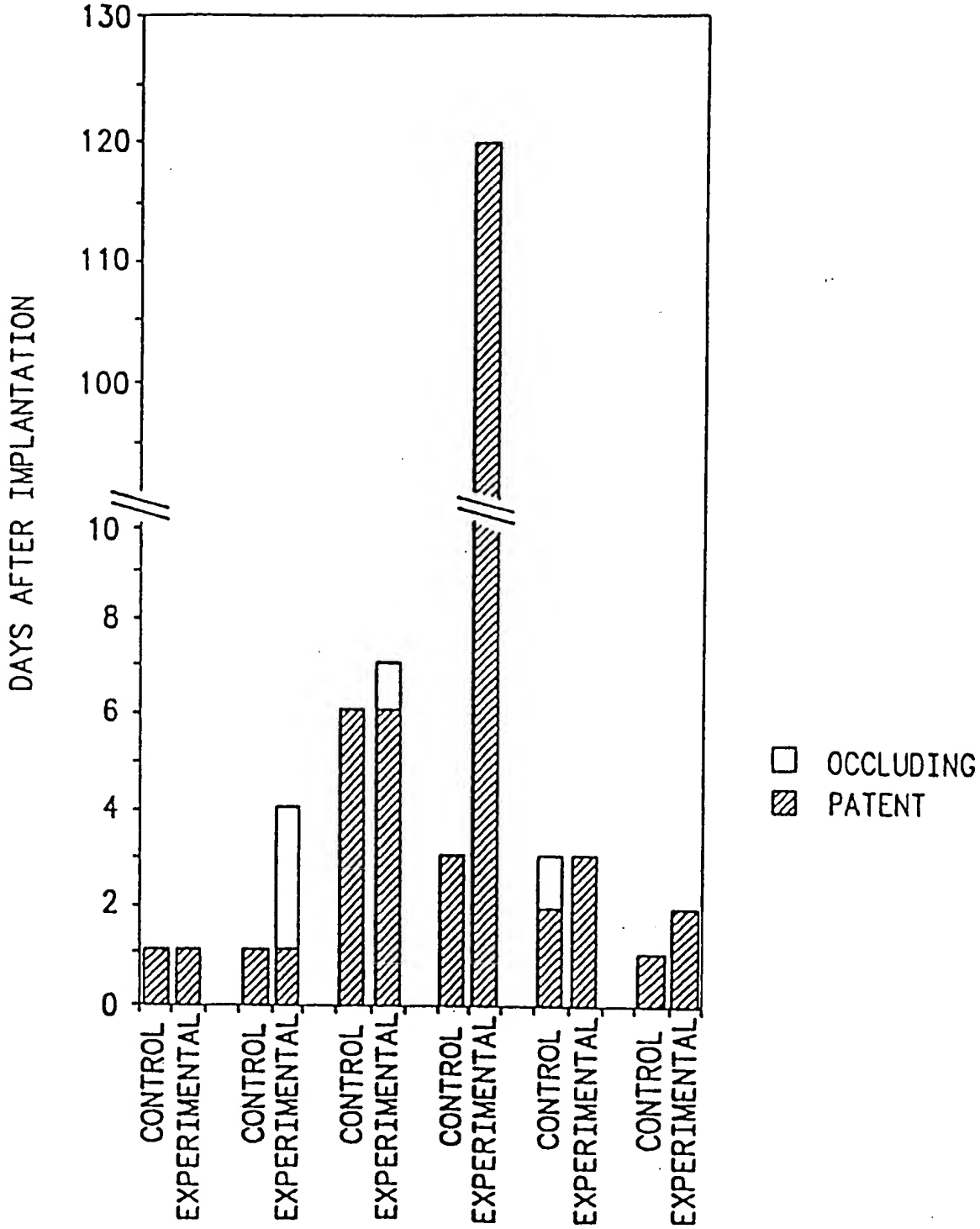


FIG. 5

FIG. 6A

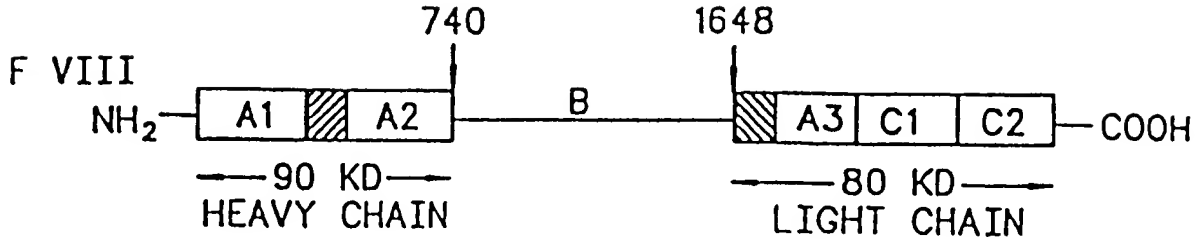


FIG. 6B

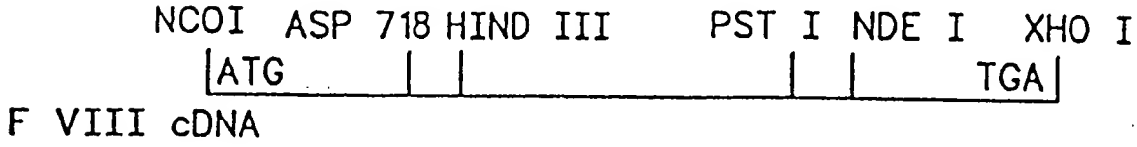
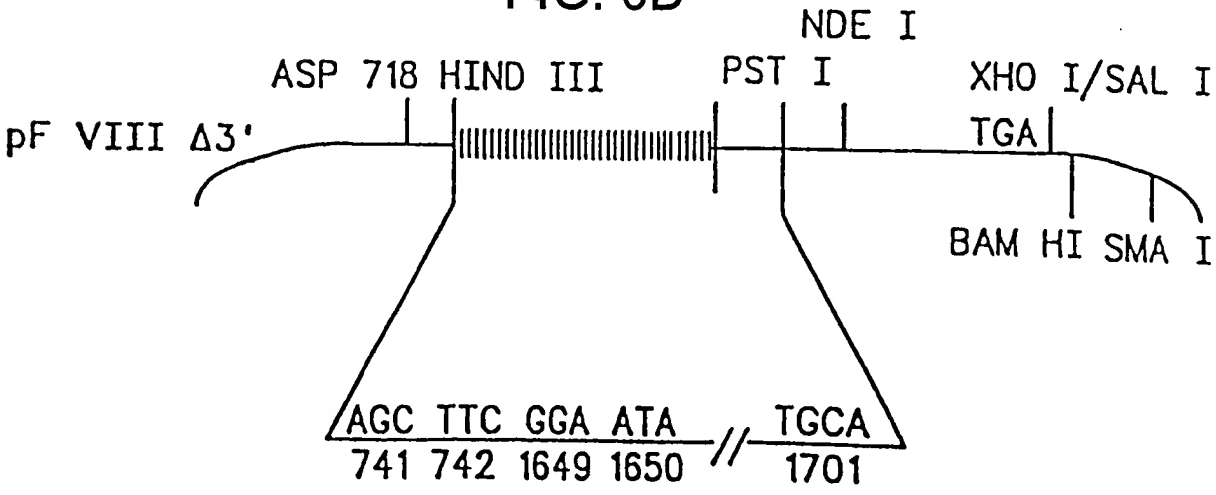


FIG. 6C

FIG. 6D



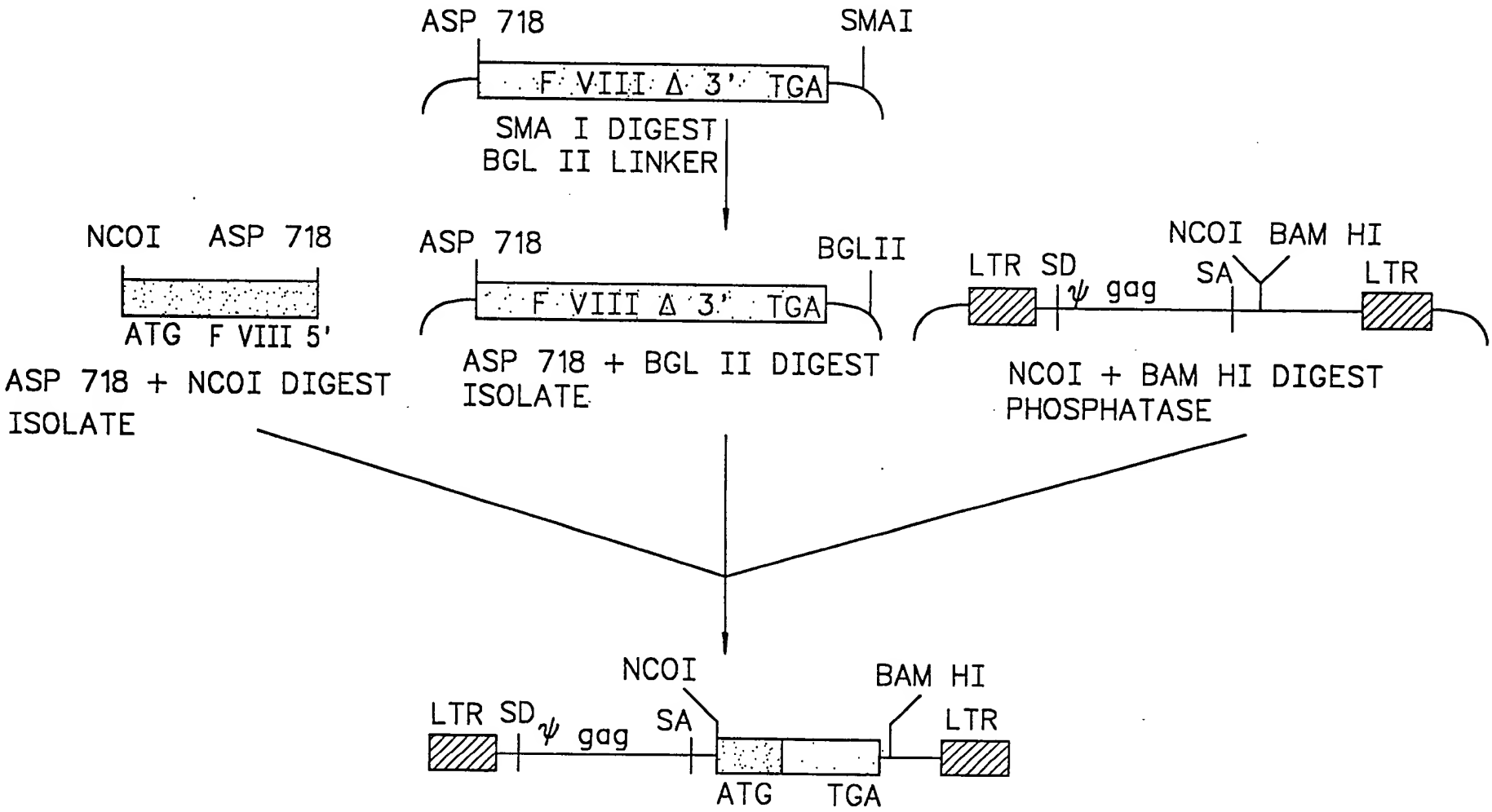


FIG. 7

FIG. 8

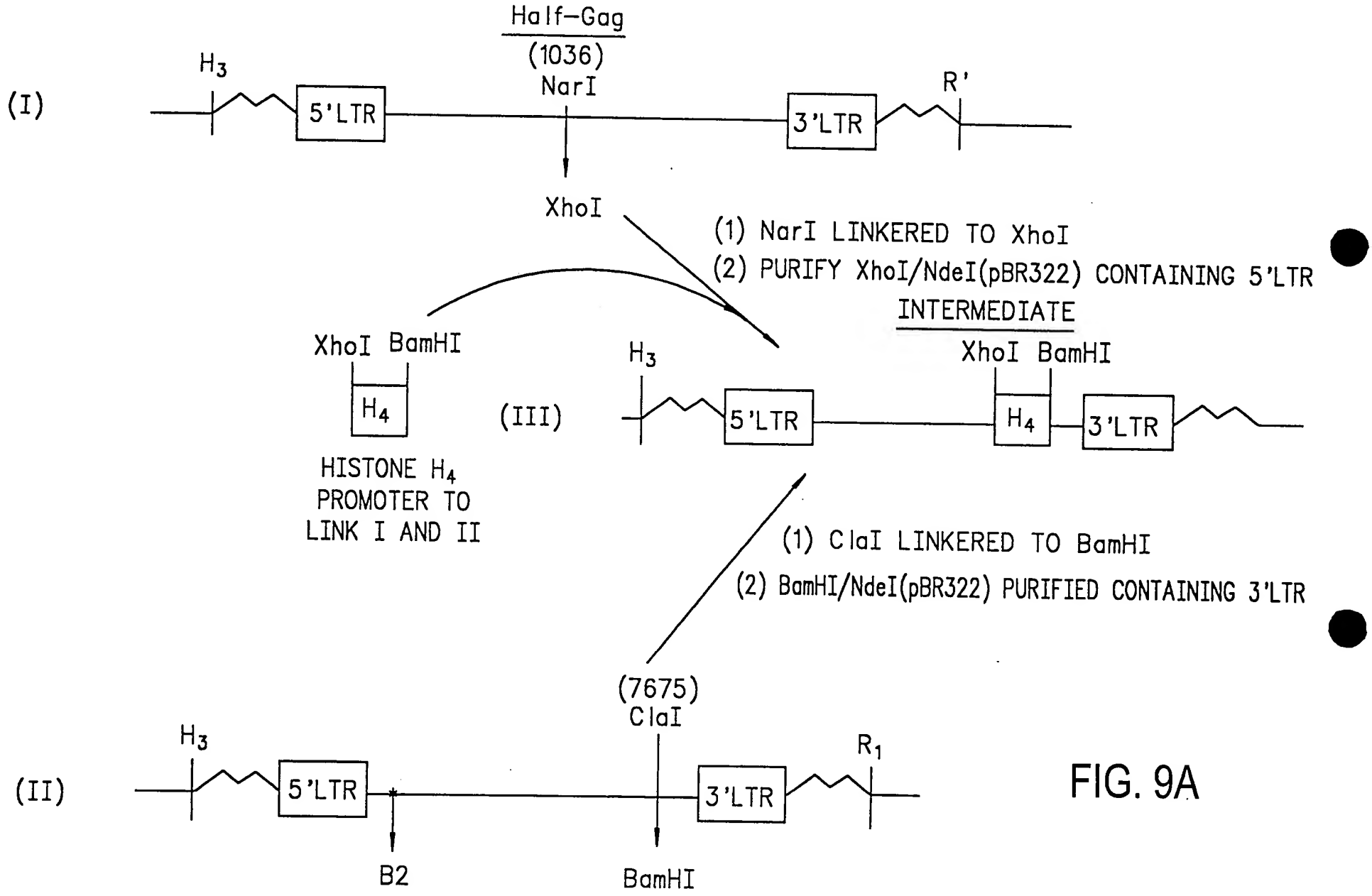


FIG. 9A

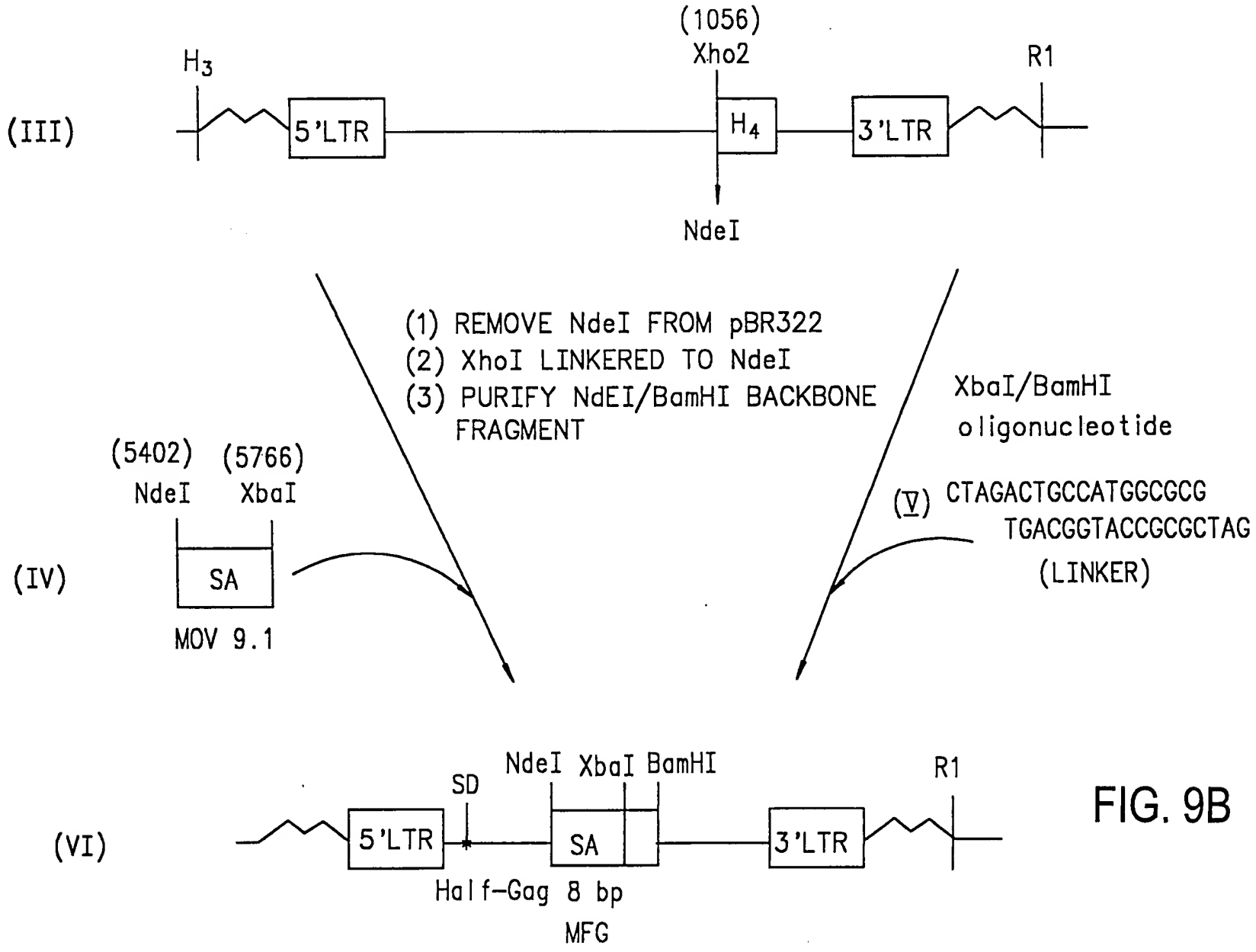


FIG. 9B

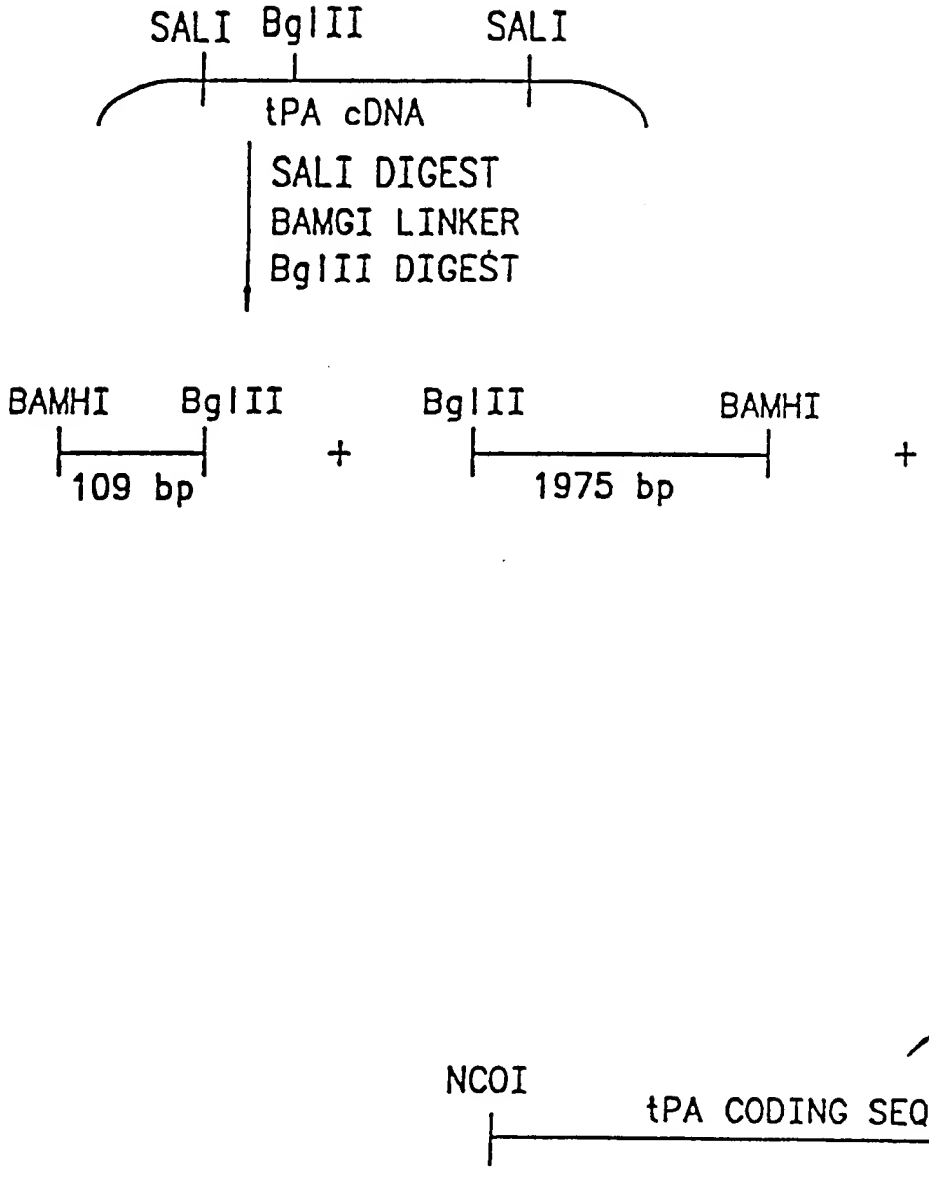


FIG. 10

FIG. 11A

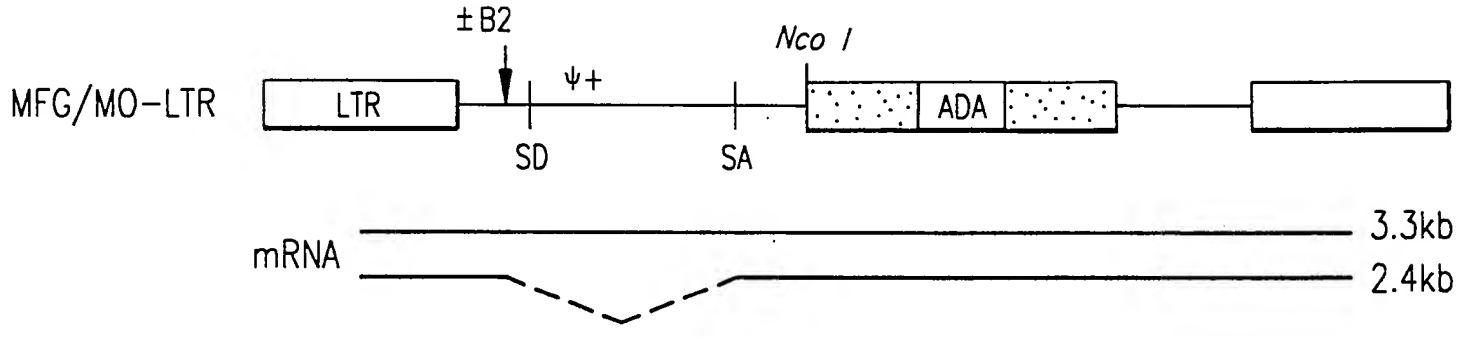


FIG. 11B

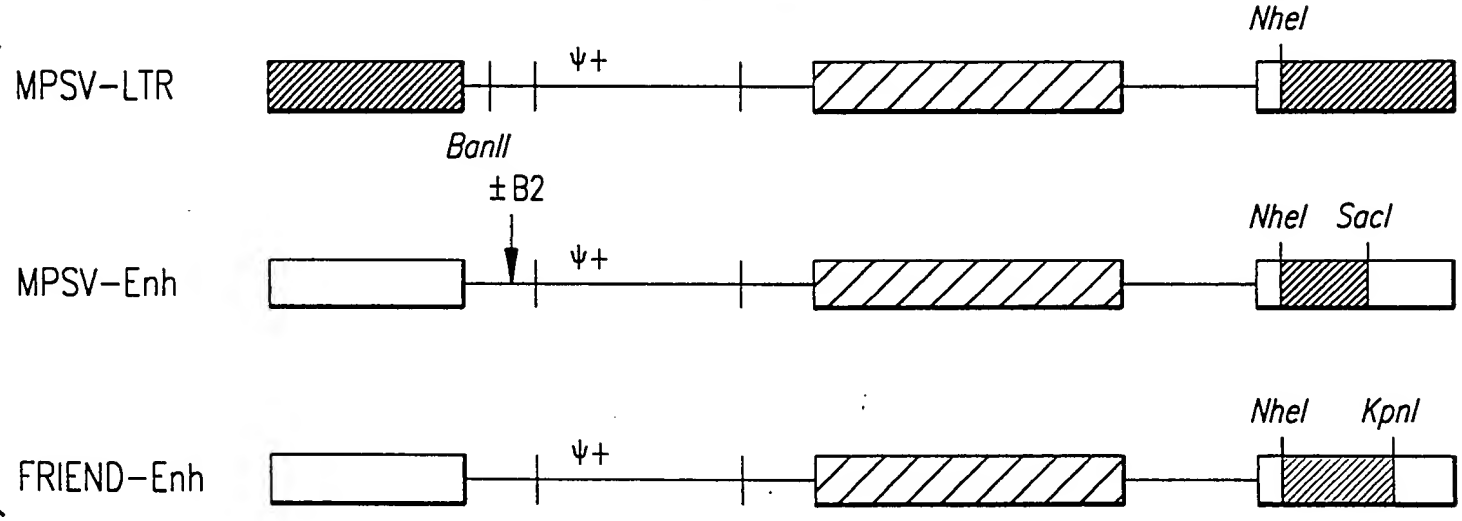
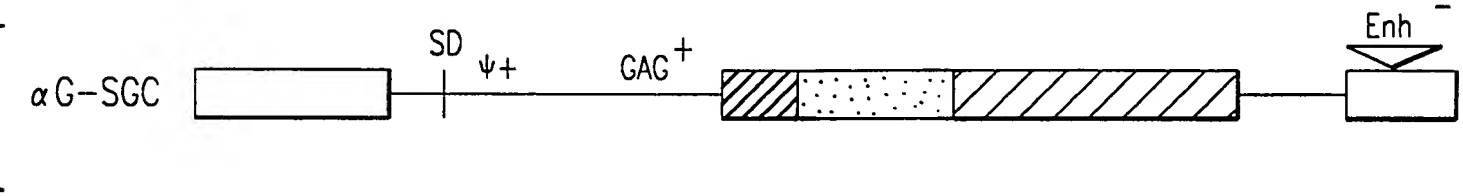


FIG. 11C



SUBCLASS

DRAFTS

Vector	Cells / lanes			Control
Mo-LTR 191 DAYS (hADA ▶, mADA ▶)	3×10^6: 33 34 35 36 37	5×10^5: 38 39 40 41 42 44 45 46 47 48		CONTROL
Mo-LTR/B2 191 DAYS	4.5×10^6: 54 55 56 57 58	5×10^5: 59 60 61 62 63 64 65 66 67 68		CONTROL
MPSV-Enh 206 DAYS	1.5×10^6: 90 91 92 93	5×10^5: 94 95 96 97 98 99 100 101 102 103 104		CONTROL
MPSV-Enh/B2 207 DAYS	2×10^6: 72 73 74 75 76	5×10^5: 77 78 79 80 81 82 83 84 85 86		CONTROL
Fr-Enh 184 DAYS	10^6: 15 16 17 18	5×10^5: 19 20 21 22 23 24 25 26 27 28 29		CONTROL
MPSV-LTR 177 DAYS	1.8×10^6: 126 127 128 129 130	5×10^5: 131 132 133 134 135 136 137 138 141 142 144	2.5×10^5: 145 146	CONTROL
αG-SGC 170 DAYS	10^6: 108 109 110	5×10^5: 111 112 113 114 115 116 117 118 119 120 121 123	2×10^5: 124 125	CONTROL

FIG. 12A

n_1 $r \geqslant 1$	n_2 $1 < r \leqslant 1/4$	$n_1 + n_2/N$
14	1	15/15
14	1	15/15
13	1	14/15
9	6	15/15
11	2	13/15
16	2	18/18
0	4	4/17
77	17	94/110

FIG. 12B

Mo-LTR		191	402		191	402		191	402							← DAYS AFTER BMT
80% (n=3)	#39	0.9	1.0	#40	1.4	0.7	#41	1.0	0.8							← hADA ← mADA ← RATIO hADA/mADA
Mo-LTR/B2		191	424		191	424		191	424		191	424				
82% (n=4)	#54	1.8	1.5	#56	1.8	1.1	#57	1.8	2	#58	1.7	1.2				
Fr-Enh		184	430		184	430		184	430		184	430				
80% (n=4)	#15	1.6	1.3	#16	1.4	0.8	#17	1.2	1.6	#18	1.2	0.6				
MPSV-LTR		177	361		177	361		177	ND		177	411		177	411		177	411
77% (n=4)	#126	2.2	1.7	#127	2.2	2.0	#129	1.8	ND	#141	ND	ND	#142	2.5	1.5	#144	1.9	1.4
αG-SGC		170	420		170	420		170	399		170	420		CONTROL-				
59% (n=3)	#117	0.6	0.4	#121	0.05	0.03	#123	ND	ND	#118	0.8	0.4		NO VECTOR				← mADA

FIG. 12C

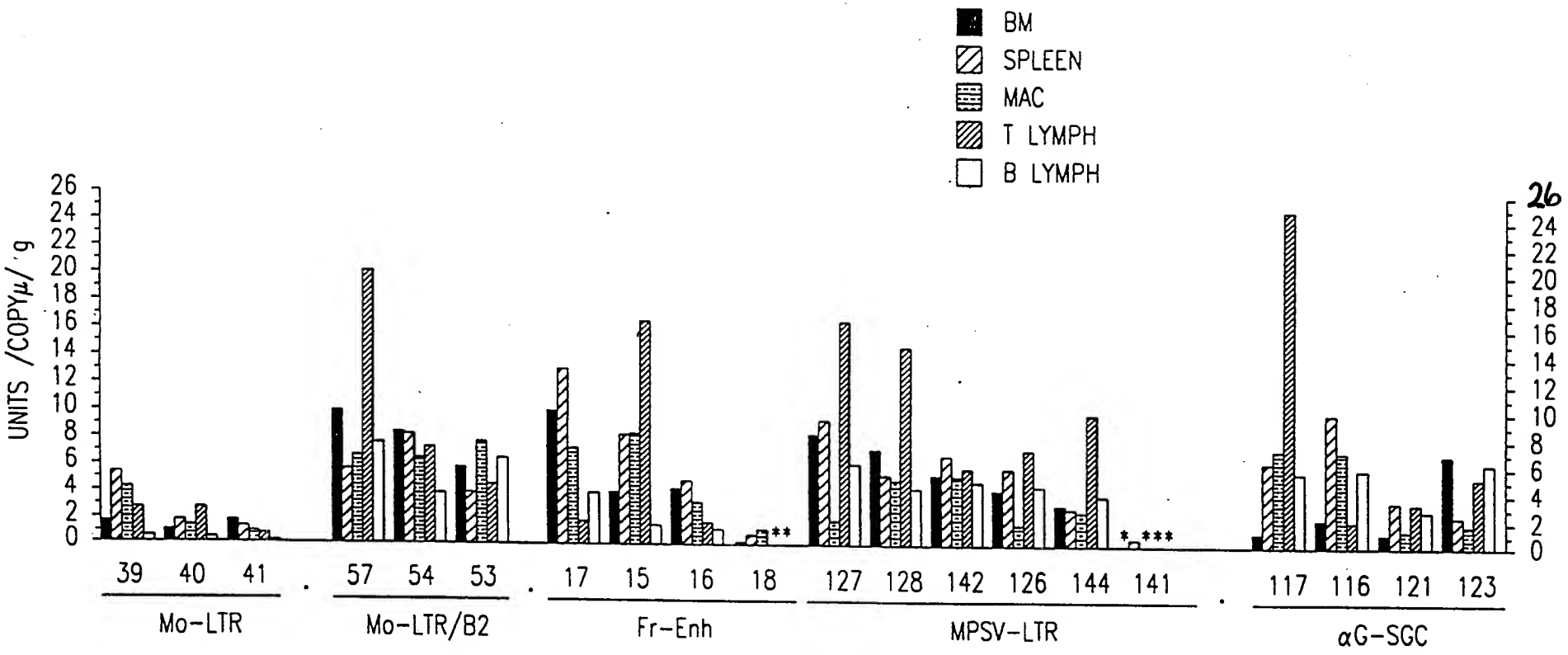


FIG. 13A

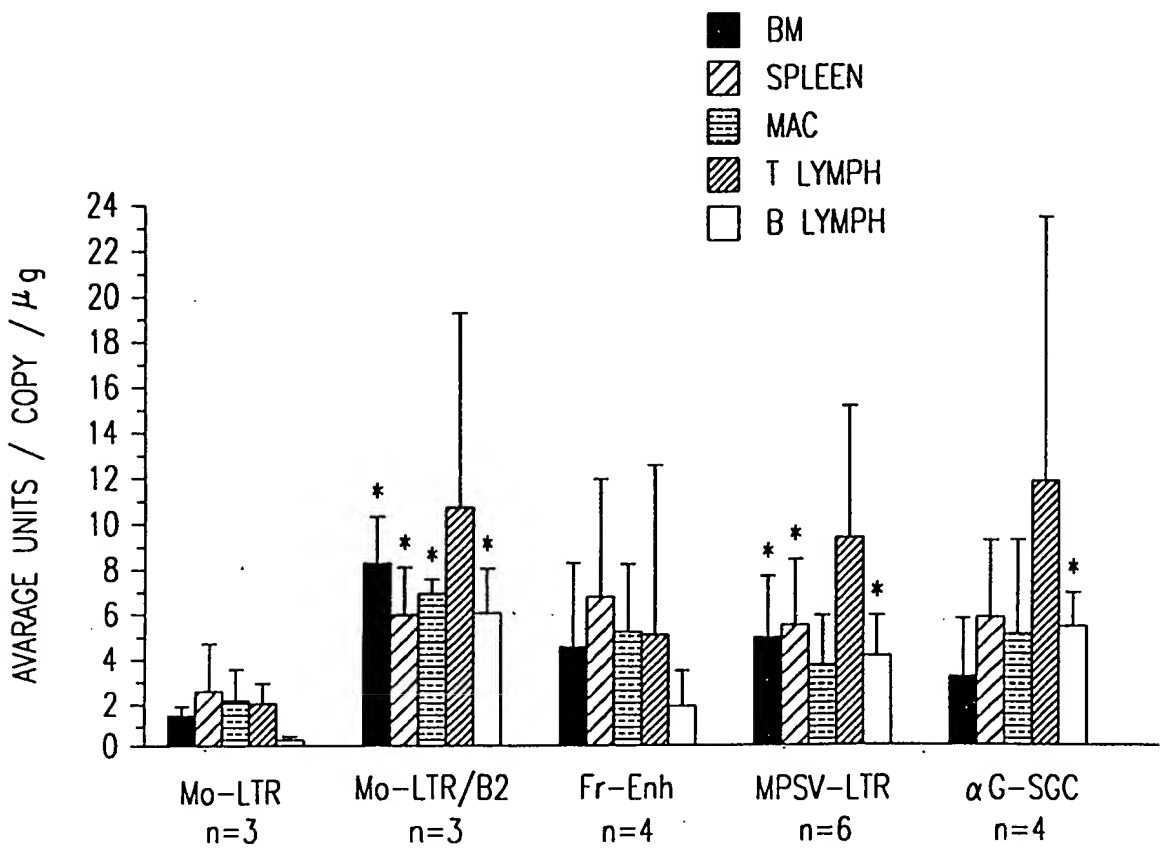


FIG. 13B

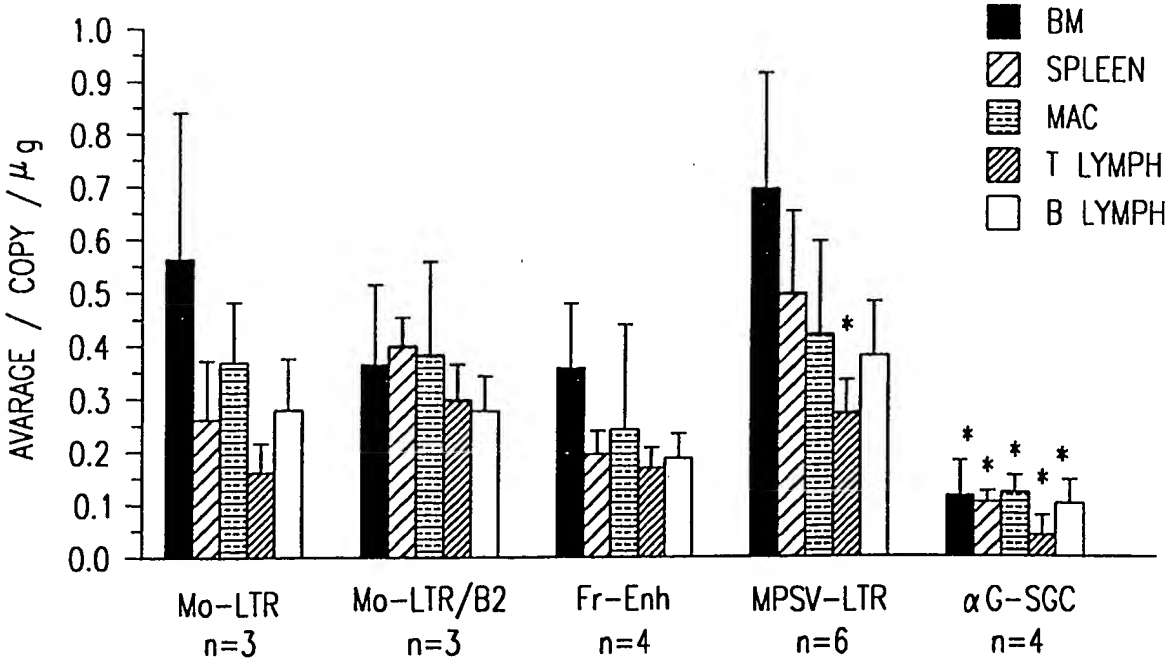


FIG. 13C

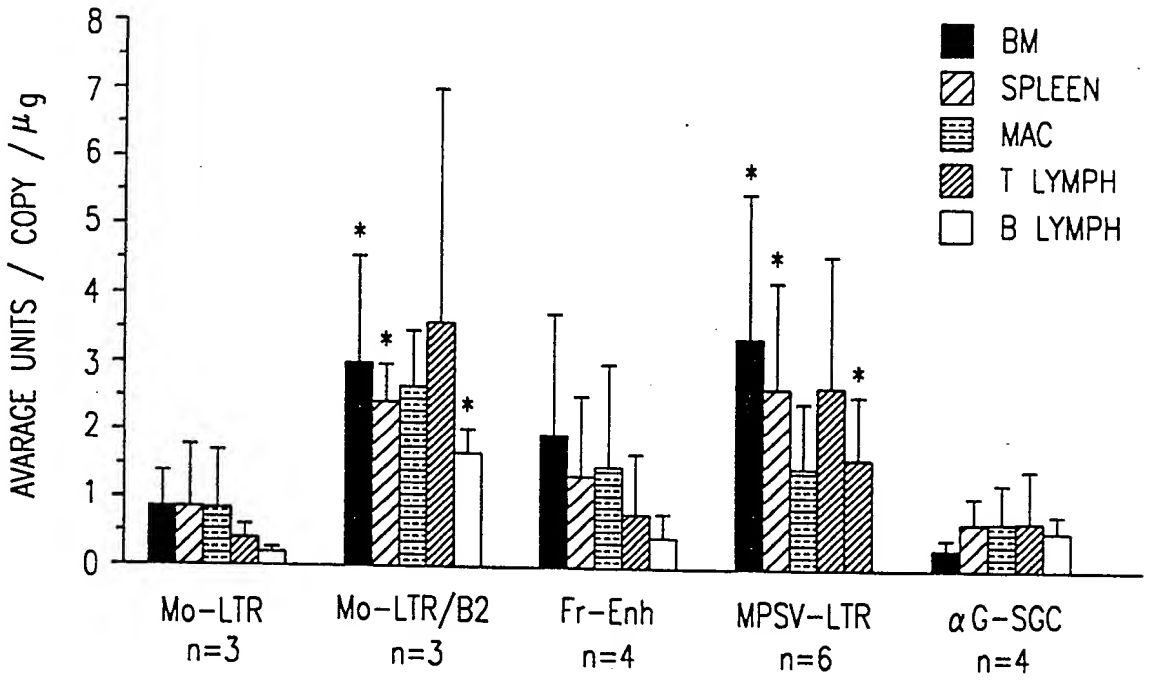


FIG. 13D

```
MoMuLV: GGTGGAACTGACGAGTTCGGAACACCCGGCCGCAACCCTGGGAGACGTCCCAGGGACTTCGGGGGCCGTTTTTGTGGCCCGACCT
MFG:    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
MFG-S:  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

MoMuLV: GAGTCCAAAAATCCCGATCGTTTTGGACTCTTTGGTGCACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGACGAGAACC
MFG:    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
MFG-S:  XXXXXXTXXXXXXXXXXXXXXXXAXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

MoMuLV: TAAAACAGTTCCCGCCTCCGTCTGAATTTTTGCTTTCGGTTTGGGACCGAAGCCGCGCCGCGCGTCTTGTCTGCTGCAGCATCGT
MFG:    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
MFG-S:  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

MoMuLV: TCTGTGTTGTCTCTGTCTGACTGTGTTTCTGTATTTGTCTGAGAATATGGG------CCAGACTGTTACCACTCCCT
MFG:    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
MFG-S:  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

FIG. 14

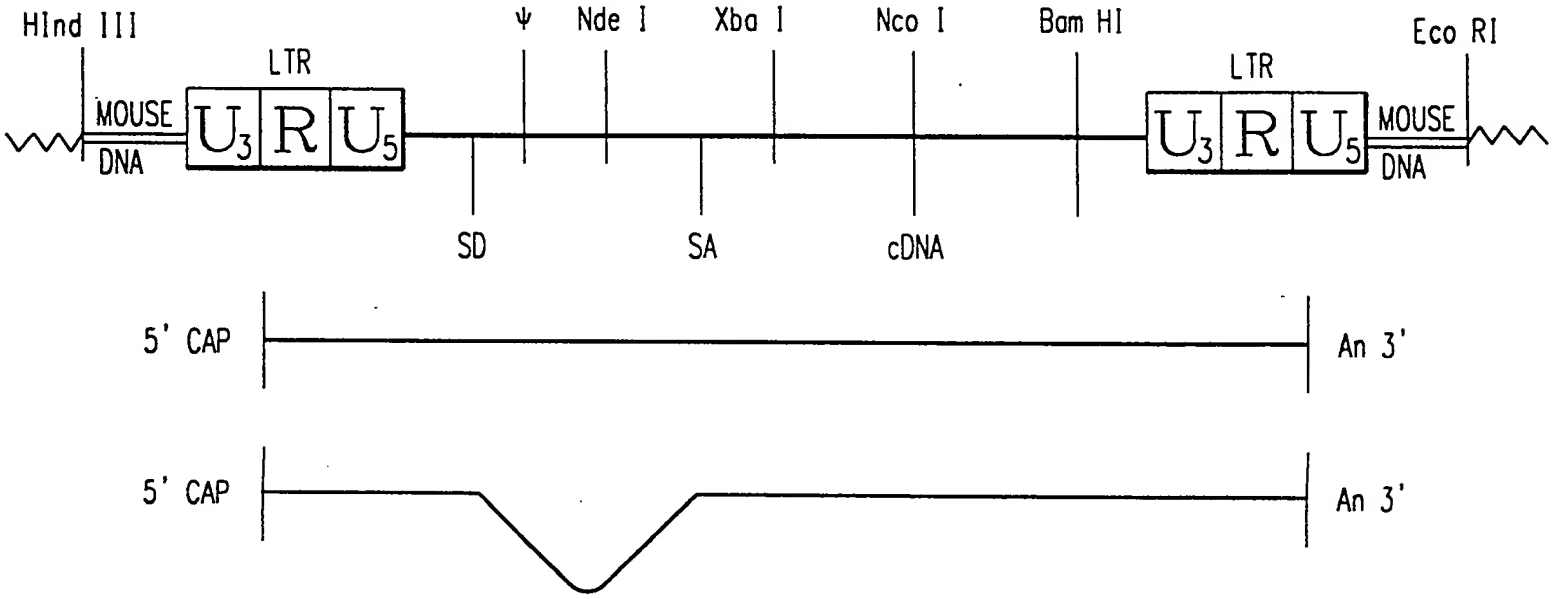


FIG. 15

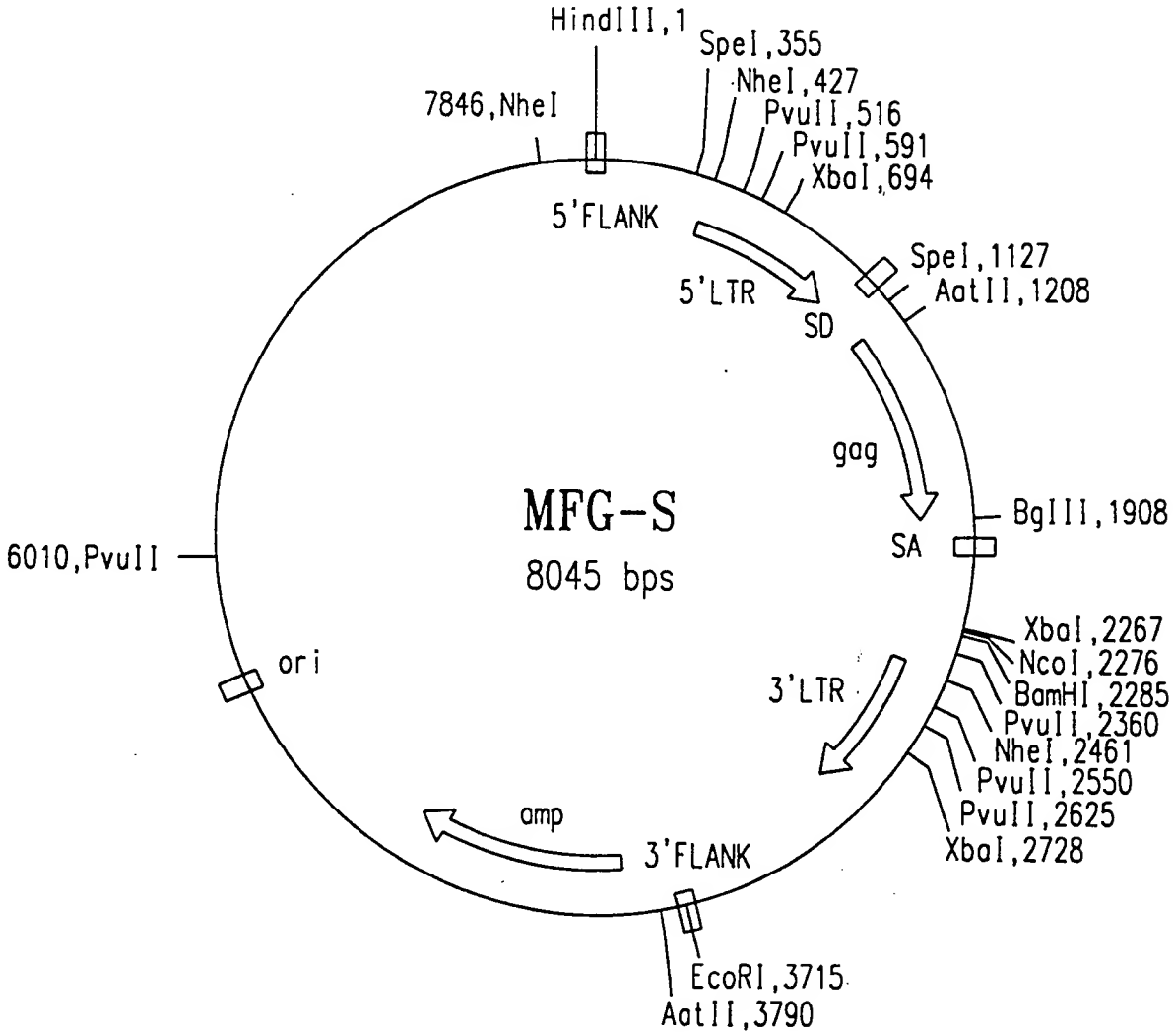


FIG. 16

```
1   AAGCTTTGCT CTTAGGAGTT TCCTAATACA TCCCAAACTC AAATATATAA AGCATTTGAC
    TTCGAAACGA GAATCCTCAA AGGATTATGT AGGGTTTGAG TTTATATATT TCGTAAACTG

61  TTGTTCTATG CCCTAGGGGG CGGGGGGAAG CTAAGCCAGC TTTTTTTAAC ATTTAAAATG
    AACAAGATAC GGGATCCCCC GCCCCCCTTC GATTCGGTCG AAAAAAATTG TAAATTTTAC

121 TTAATTCCAT TTTAAATGCA CAGATGTTTT TATTTCATAA GGGTTTCAAT GTGCATGAAT
    AATTAAGGTA AAATTTACGT GTCTACAAAA ATAAAGTATT CCCAAAGTTA CACGTACTTA

181 GCTGCAATAT TCCTGTTACC AAAGCTAGTA TAAATAAAAA TAGATAAACG TGGAAATTAC
    CGACGTTATA AGGACAATGG TTTCGATCAT ATTTATTTTT ATCTATTTGC ACCTTTAATG

241 TTAGAGTTTC TGTCATTAAC GTTTCCTTCC TCAGTTGACA ACATAAATGC GCTGCTGAGC
    AATCTCAAAG ACAGTAATTG CAAAGGAAGG AGTCAACTGT TGTATTTACG CGACGACTCG

301 AAGCCAGTTT GCATCTGTCA GGATCAATTT CCCATTATGC CAGTCATATT AATTACTAGT
    TTCGGTCAAA CGTAGACAGT CCTAGTTAAA GGGTAATACG GTCAGTATAA TTAATGATCA

361 CAATTAGTTG ATTTTTATTT TTGACATATA CATGTGAATG AAAGACCCCA CCTGTAGGTT
    GTTAATCAAC TAAAAATAAA AACTGTATAT GTACACTTAC TTTCTGGGGT GGACATCCAA

421 TGGCAAGCTA GCTTAAGTAA CGCCATTTTG CAAGGCATGG AAAAATACAT AACTGAGAAT
    ACCGTTCGAT CGAATTCATT GCGGTAAAAC GTTCCGTACC TTTTTATGTA TTGACTCTTA

481 AGAAAAGTTC AGATCAAGGT CAGGAACAGA TGGAACAGCT GAATATGGGC CAAACAGGAT
    TCTTTTCAAG TCTAGTTCCA GTCCTTGTCT ACCTTGTCGA CTTATACCCG GTTTGTCCTA

541 ATCTGTGGTA AGCAGTTCCT GCCCCGGCTC AGGGCCAAGA ACAGATGGAA CAGCTGAATA
    TAGACACCAT TCGTCAAGGA CGGGGCCGAG TCCCGGTTCT TGTCTACCTT GTCGACTTAT

601 TGGGCCAAAC AGGATATCTG TGGTAAGCAG TTCCTGCCCC GGCTCAGGGC CAAGAACAGA
    ACCCGGTTTG TCCTATAGAC ACCATTCGTC AAGGACGGGG CCGAGTCCCG GTTCTTGTCT

661 TGGTCCCCAG ATGCGGTCCA GCCCTCAGCA GTTTCTAGAG AACCATCAGA TGTTTCCAGG
    ACCAGGGGTC TACGCCAGGT CGGGAGTCGT CAAAGATCTC TTGGTAGTCT ACAAAGGTCC

721 GTGCCCCAAG GACCTGAAAT GACCCTGTGC CTTATTTGAA CTAACCAATC AGTTCGCTTC
    CACGGGGTTC CTGGACTTTA CTGGGACACG GAATAAACTT GATTGGTTAG TCAAGCGAAG

781 TCGCTTCTGT TCGCGCGCTT CTGCTCCCCG AGCTCAATAA AAGAGCCCAC AACCCCTCAC
    AGCGAAGACA AGCGCGCGAA GACGAGGGGC TCGAGTTATT TTCTCGGGTG TTGGGGAGTG
```

FIG. 17A

```
841  TCGGGGCGCC AGTCCTCCGA TTGACTGAGT CGCCCGGGTA CCCGTGTATC CAATAAACCC
     AGCCCCGCGG TCAGGAGGCT AACTGACTCA GCGGGCCCAT GGGCACATAG GTTATTTGGG

901  TCTTGCAGTT GCATCCGACT TGTGGTCTCG CTGTTCCTTG GGAGGGTCTC CTCTGAGTGA
     AGAACGTCAA CGTAGGCTGA ACACCAGAGC GACAAGGAAC CCTCCCAGAG GAGACTCACT

961  TTGACTACCC GTCAGCGGGG GTCTTTCATT TGGGGGCTCG TCCGGGATCG GGAGACCCCT
     AACTGATGGG CAGTCGCCCC CAGAAAGTAA ACCCCCGAGC AGGCCCTAGC CCTCTGGGGA

1021 GCCCAGGGAC CACCGACCCA CCACCGGGAG GTAAGCTGGC CAGCAACTTA TCTGTGTCTG
     CGGGTCCCTG GTGGCTGGGT GGTGGCCCTC CATTCGACCG GTCGTTGAAT AGACACAGAC

1081 TCCGATTGTC TAGTGTCTAT GACTGATTTT ATGCGCCTGC GTCGGTACTA GTTAGCTAAC
     AGGCTAACAG ATCACAGATA CTGACTAAAA TACGCGGACG CAGCCATGAT CAATCGATTG

1141 TAGCTCTGTA TCTGGCGGAC CCGTGGTGGA ACTGACGAGT TCGGAACACC CGGCCGCAAC
     ATCGAGACAT AGACCGCCTG GGCACCACCT TGACTGCTCA AGCCTTGTGG GCCGGCGTTG

1201 CCTGGGAGAC GTCCCAGGGA CTTCGGGGGC CGTTTTTGTG GCCCGACCTG AGTCCTAAAA
     GGACCCTCTG CAGGGTCCCT GAAGCCCCCG GCAAAAACAC CGGGCTGGAC TCAGGATTTT

1261 TCCCGATCGT TTAGGACTCT TTGGTGCACC CCCCTTAGAG GAGGGATATG TGGTTCTGGT
     AGGGCTAGCA AATCCTGAGA AACCACGTGG GGGGAATCTC CTCCCTATAC ACCAAGACCA

1321 AGGAGACGAG AACCTAAAAC AGTTCCCGCC TCCGTCTGAA TTTTTGCTTT CGGTTTGGGA
     TCCTCTGCTC TTGGATTTTG TCAAGGGCGG AGGCAGACTT AAAAACGAAA GCCAAACCCT

1381 CCGAAGCCGC GCCGCGCGTC TTGTCTGCTG CAGCATCGTT CTGTGTTGTC TCTGTCTGAC
     GGCTTCGGCG CGGCGCGCAG AACAGACGAC GTCGTAGCAA GACACAACAG AGACAGACTG

1441 TGTGTTTCTG TATTTGTCTG AAAATATGGG CCCGGGCTAG ACTGTTACCA CTCCCTTAAG
     ACACAAAGAC ATAAACAGAC TTTTATACCC GGGCCCGATC TGACAATGGT GAGGGAATTC

1501 TTTGACCTTA GGTCACTGGA AAGATGTCGA GCGGATCGCT CACAACCAGT CGGTAGATGT
     AAACTGGAAT CCAGTGACCT TTCTACAGCT CGCCTAGCGA GTGTTGGTCA GCCATCTACA

1561 CAAGAAGAGA CGTTGGGTTA CCTTCTGCTC TGCAGAATGG CCAACCTTTA ACGTCGGATG
     GTTCTTCTCT GCAACCCAAT GGAAGACGAG ACGTCTTACC GGTTGGAAAT TGCAGCCTAC
```

FIG. 17B

```
1621  GCCGCGAGAC GGCACCTTTA ACCGAGACCT CATCACCCAG GTTAAGATCA AGGTCTTTTC
      CGGCGCTCTG CCGTGGAAAT TGGCTCTGGA GTAGTGGGTC CAATTCTAGT TCCAGAAAAG

1681  ACCTGGCCCG CATGGACACC CAGACCAGGT CCCCTACATC GTGACCTGGG AAGCCTTGGC
      TGGACCGGGC GTACCTGTGG GTCTGGTCCA GGGGATGTAG CACTGGACCC TTCGGAACCG

1741  TTTTGACCCC CCTCCCTGGG TCAAGCCCTT TGTACACCCT AAGCCTCCGC CTCCTCTTCC
      AAAACTGGGG GGAGGGACCC AGTTCGGGAA ACATGTGGGA TTCGGAGGCG GAGGAGAAGG

1801  TCCATCCGCC CCGTCTCTCC CCCTTGAACC TCCTCGTTCG ACCCCGCCTC GATCCTCCCT
      AGGTAGGCGG GGCAGAGAGG GGGAACTTGG AGGAGCAAGC TGGGGCGGAG CTAGGAGGGA

1861  TTATCCAGCC CTCACTCCTT CTCTAGGCGC CCCCATATGG CCATATGAGA TCTTATATGG
      AATAGGTCGG GAGTGAGGAA GAGATCCGCG GGGGTATACC GGTATACTCT AGAATATACC

1921  GGCACCCCCG CCCCTTGTAA ACTTCCCTGA CCCTGACATG ACAAGAGTTA CTAACAGCCC
      CCGTGGGGGC GGGGAACATT TGAAGGGACT GGGACTGTAC TGTTCTCAAT GATTGTCGGG

1981  CTCTCTCCAA GCTCACTTAC AGGCTCTCTA CTTAGTCCAG CACGAAGTCT GGAGACCTCT
      GAGAGAGGTT CGAGTGAATG TCCGAGAGAT GAATCAGGTC GTGCTTCAGA CCTCTGGAGA

2041  GGCGGCAGCC TACCAAGAAC AACTGGACCG ACCGGTGGTA CCTCACCCTT ACCGAGTCGG
      CCGCCGTCGG ATGGTTCTTG TTGACCTGGC TGGCCACCAT GGAGTGGGAA TGGCTCAGCC

2101  CGACACAGTG TGGGTCCGCC GACACCAGAC TAAGAACCTA GAACCTCGCT GGAAAGGACC
      GCTGTGTCAC ACCCAGGCGG CTGTGGTCTG ATTCTTGGAT CTTGGAGCGA CCTTTCCTGG

2161  TTACACAGTC CTGCTGACCA CCCCCACCGC CCTCAAAGTA GACGGCATCG CAGCTTGGAT
      AATGTGTCAG GACGACTGGT GGGGGTGGCG GGAGTTTCAT CTGCCGTAGC GTCGAACCTA

2221  ACACGCCGCC CACGTGAAGG CTGCCGACCC CGGGGGTGGA CCATCCTCTA GACTGCCATG
      TGTGCGGCGG GTGCACTTCC GACGGCTGGG GCCCCCACCT GGTAGGAGAT CTGACGGTAC

2281  GCGCGGATCC GGATTAGTCC AATTTGTTAA AGACAGGATA TCAGTGGTCC AGGCTCTAGT
      CGCGCCTAGG CCTAATCAGG TTAAACAATT TCTGTCCTAT AGTCACCAGG TCCGAGATCA

2341  TTTGACTCAA CAATATCACC AGCTGAAGCC TATAGAGTAC GAGCCATAGA TAAAATAAAA
      AAACTGAGTT GTTATAGTGG TCGACTTCGG ATATCTCATG CTCGGTATCT ATTTTATTTT
```

FIG. 17C

```
2401  GATTTTATTT AGTCTCCAGA AAAAGGGGGG AATGAAAGAC CCCACCTGTA GGTTTGGCAA
      CTAAAATAAA TCAGAGGTCT TTTTCCCCCC TTACTTTCTG GGGTGGACAT CCAAACCGTT

2461  GCTAGCTTAA GTAACGCCAT TTTGCAAGGC ATGGAAAAAT ACATAACTGA GAATAGAGAA
      CGATCGAATT CATTGCGGTA AAACGTTCCG TACCTTTTTA TGTATTGACT CTTATCTCTT

2521  GTTCAGATCA AGGTCAGGAA CAGATGGAAC AGCTGAATAT GGGCCAAACA GGATATCTGT
      CAAGTCTAGT TCCAGTCCTT GTCTACCTTG TCGACTTATA CCCGGTTTGT CCTATAGACA

2581  GGTAAGCAGT TCCTGCCCCG GCTCAGGGCC AAGAACAGAT GGAACAGCTG AATATGGGCC
      CCATTCGTCA AGGACGGGGC CGAGTCCCGG TTCTTGTCTA CCTTGTCGAC TTATACCCGG

2641  AAACAGGATA TCTGTGGTAA GCAGTTCCTG CCCCGGCTCA GGGCCAAGAA CAGATGGTCC
      TTTGTCCTAT AGACACCATT CGTCAAGGAC GGGGCCGAGT CCCGGTTCTT GTCTACCAGG

2701  CCAGATGCGG TCCAGCCCTC AGCAGTTTCT AGAGAACCAT CAGATGTTTC CAGGGTGCCC
      GGTCTACGCC AGGTCGGGAG TCGTCAAAGA TCTCTTGGTA GTCTACAAAG GTCCCACGGG

2761  CAAGGACCTG AAATGACCCT GTGCCTTATT TGAACTAACC AATCAGTTCG CTTCTCGCTT
      GTTCCTGGAC TTTACTGGGA CACGGAATAA ACTTGATTGG TTAGTCAAGC GAAGAGCGAA

2821  CTGTTCGCGC GCTTCTGCTC CCCGAGCTCA ATAAAAGAGC CCACAACCCC TCACTCGGGG
      GACAAGCGCG CGAAGACGAG GGGCTCGAGT TATTTTCTCG GGTGTTGGGG AGTGAGCCCC

2881  CGCCAGTCCT CCGATTGACT GAGTCGCCCG GGTACCCGTG TATCCAATAA ACCCTCTTGC
      GCGGTCAGGA GGCTAACTGA CTCAGCGGGC CCATGGGCAC ATAGGTTATT TGGGAGAACG

2941  AGTTGCATCC GACTTGTGGT CTCGCTGTTC CTTGGGAGGG TCTCCTCTGA GTGATTGACT
      TCAACGTAGG CTGAACACCA GAGCGACAAG GAACCCTCCC AGAGGAGACT CACTAACTGA

3001  ACCCGTCAGC GGGGGTCTTT CACACATGCA GCATGTATCA AAATTAATTT GGTTTTTTTT
      TGGGCAGTCG CCCCCAGAAA GTGTGTACGT CGTACATAGT TTTAATTAAA CCAAAAAAAA

3061  CTTAAGTATT TACATTAAAT GGCCATAGTA CTTAAAGTTA CATTGGCTTC CTTGAAATAA
      GAATTCATAA ATGTAATTTA CCGGTATCAT GAATTTCAAT GTAACCGAAG GAACTTTATT

3121  ACATGGAGTA TTCAGAATGT GTCATAAATA TTTCTAATTT TAAGATAGTA TCTCCATTGG
      TGTACCTCAT AAGTCTTACA CAGTATTTAT AAAGATTAAA ATTCTATCAT AGAGGTAACC

3181  CTTTCTACTT TTTCTTTTAT TTTTTTTTGT CCTCTGTCTT CCATTTGTTG TTGTTGTTGT
      GAAAGATGAA AAAGAAAATA AAAAAAAACA GGAGACAGAA GGTAAACAAC AACAACAACA
```

FIG. 17D

```
3241  TTGTTTGTTT GTTTGTTGGT TGGTTGGTTA ATTTTTTTTT AAAGATCCTA CACTATAGTT
      AACAAACAAA CAAACAACCA ACCAACCAAT TAAAAAAAAA TTTCTAGGAT GTGATATCAA

3301  CAAGCTAGAC TATTAGCTAC TCTGTAACCC AGGGTGACCT TGAAGTCATG GGTAGCCTGC
      GTTCGATCTG ATAATCGATG AGACATTGGG TCCCACTGGA ACTTCAGTAC CCATCGGACG

3361  TGTTTTAGCC TTCCCACATC TAAGATTACA GGTATGAGCT ATCATTTTTG GTATATTGAT
      ACAAAATCGG AAGGGTGTAG ATTCTAATGT CCATACTCGA TAGTAAAAAC CATATAACTA

3421  TGATTGATTG ATTGATGTGT GTGTGTGTGA TTGTGTTTGT GTGTGTGANT GTGWANATGT
      ACTAACTAAC TAACTACACA CACACACACT AACACAAACA CACACACTNA CACWTNTACA

3481  GTGTATGGNT GTGTGTGAKT GTGTGTATGT ATGNYTGTGT GTGANTGYGT GTGTGTGANT
      CACATACCNA CACACACTMA CACACATACA TACNRACACA CACTNACRCA CACACACTNA

3541  GTGCATGTGT GTGTGTGTGA CTGTGTCTAT GTGTATGACT GTGTGTGTGT GTGTGTGTGT
      CACGTACACA CACACACACT GACACAGATA CACATACTGA CACACACACA CACACACACA

3601  GTGTGTGTGT GTGTGTGTGT GTGTGTTGTG AAAAAATATT CTATGGTAGT GAGAGCCAAC
      CACACACACA CACACACACA CACACAACAC TTTTTTATAA GATACCATCA CTCTCGGTTG

3661  GCTCCGGCTC AGGTGTCAGG TTGGTTTTTG AGACAGAGTC TTTCACTTAG CTTGGAATTC
      CGAGGCCGAG TCCACAGTCC AACCAAAAAC TCTGTCTCAG AAAGTGAATC GAACCTTAAG

3721  TTGAAGACGA AAGGGCCTCG TGATACGCCT ATTTTTATAG GTTAATGTCA TGATAATAAT
      AACTTCTGCT TTCCCGGAGC ACTATGCGGA TAAAAATATC CAATTACAGT ACTATTATTA

3781  GGTTTCTTAG ACGTCAGGTG GCACTTTTCG GGGAAATGTG CGCGGAACCC CTATTTGTTT
      CCAAAGAATC TGCAGTCCAC CGTGAAAAGC CCCTTTACAC GCGCCTTGGG GATAAACAAA

3841  ATTTTTCTAA ATACATTCAA ATATGTATCC GCTCATGAGA CAATAACCCT GATAAATGCT
      TAAAAAGATT TATGTAAGTT TATACATAGG CGAGTACTCT GTTATTGGGA CTATTTACGA

3901  TCAATAATAT TGAAAAAGGA AGAGTATGAG TATTCAACAT TTCCGTGTCG CCCTTATTCC
      AGTTATTATA ACTTTTTCCT TCTCATACTC ATAAGTTGTA AAGGCACAGC GGGAATAAGG

3961  CTTTTTTGCG GCATTTTGCC TTCCTGTTTT TGCTCACCCA GAAACGCTGG TGAAAGTAAA
      GAAAAAACGC CGTAAAACGG AAGGACAAAA ACGAGTGGGT CTTTGCGACC ACTTTCATTT

4021  AGATGCTGAA GATCAGTTGG GTGCACGAGT GGGTTACATC GAACTGGATC TCAACAGCGG
      TCTACGACTT CTAGTCAACC CACGTGCTCA CCCAATGTAG CTTGACCTAG AGTTGTCGCC
```

FIG. 17E

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4081  TAAGATCCTT GAGAGTTTTC GCCCCGAAGA ACGTTTTCCA ATGATGAGCA CTTTTAAAGT
      ATTCTAGGAA CTCTCAAAAG CGGGGCTTCT TGCAAAAGGT TACTACTCGT GAAAATTTCA

4141  TCTGCTATGT GGCGCGGTAT TATCCCGTGT TGACGCCGGG CAAGAGCAAC TCGGTCGCCG
      AGACGATACA CCGCGCCATA ATAGGGCACA ACTGCGGCCC GTTCTCGTTG AGCCAGCGGC

4201  CATACACTAT TCTCAGAATG ACTTGGTTGA GTACTCACCA GTCACAGAAA AGCATCTTAC
      GTATGTGATA AGAGTCTTAC TGAACCAACT CATGAGTGGT CAGTGTCTTT TCGTAGAATG

4261  GGATGGCATG ACAGTAAGAG AATTATGCAG TGCTGCCATA ACCATGAGTG ATAACACTGC
      CCTACCGTAC TGTCATTCTC TTAATACGTC ACGACGGTAT TGGTACTCAC TATTGTGACG

4321  GGCCAACTTA CTTCTGACAA CGATCGGAGG ACCGAAGGAG CTAACCGCTT TTTTGCACAA
      CCGGTTGAAT GAAGACTGTT GCTAGCCTCC TGGCTTCCTC GATTGGCGAA AAAACGTGTT

4381  CATGGGGGAT CATGTAACTC GCCTTGATCG TTGGGAACCG GAGCTGAATG AAGCCATACC
      GTACCCCCTA GTACATTGAG CGGAACTAGC AACCCTTGGC CTCGACTTAC TTCGGTATGG

4441  AAACGACGAG CGTGACACCA CGATGCCTGC AGCAATGGCA ACAACGTTGC GCAAACTATT
      TTTGCTGCTC GCACTGTGGT GCTACGGACG TCGTTACCGT TGTTGCAACG CGTTTGATAA

4501  AACTGGCGAA CTACTTACTC TAGCTTCCCG GCAACAATTA ATAGACTGGA TGGAGGCGGA
      TTGACCGCTT GATGAATGAG ATCGAAGGGC CGTTGTTAAT TATCTGACCT ACCTCCGCCT

4561  TAAAGTTGCA GGACCACTTC TGCGCTCGGC CCTTCCGGCT GGCTGGTTTA TTGCTGATAA
      ATTTCAACGT CCTGGTGAAG ACGCGAGCCG GGAAGGCCGA CCGACCAAAT AACGACTATT

4621  ATCTGGAGCC GGTGAGCGTG GGTCTCGCGG TATCATTGCA GCACTGGGGC CAGATGGTAA
      TAGACCTCGG CCACTCGCAC CCAGAGCGCC ATAGTAACGT CGTGACCCCG GTCTACCATT

4681  GCCCTCCCGT ATCGTAGTTA TCTACACGAC GGGGAGTCAG GCAACTATGG ATGAACGAAA
      CGGGAGGGCA TAGCATCAAT AGATGTGCTG CCCCTCAGTC CGTTGATACC TACTTGCTTT

4741  TAGACAGATC GCTGAGATAG GTGCCTCACT GATTAAGCAT TGGTAACTGT CAGACCAAGT
      ATCTGTCTAG CGACTCTATC CACGGAGTGA CTAATTCGTA ACCATTGACA GTCTGGTTCA
```

FIG. 17F

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4801  TTACTCATAT ATACTTTAGA TTGATTTAAA ACTTCATTTT TAATTTAAAA GGATCTAGGT
      AATGAGTATA TATGAAATCT AACTAAATTT AGAAGTAAAA ATTAAATTTT CCTAGATCCA

4861  GAAGATCCTT TTTGATAATC TCATGACCAA AATCCCTTAA CGTGAGTTTT CGTTCCACTG
      CTTCTAGGAA AAACTATTAG AGTACTGGTT TTAGGGAATT GCACTCAAAA GCAAGGTGAC

4921  AGCGTCAGAC CCCGTAGAAA AGATCAAAGG ATCTTCTTGA GATCCTTTTT TTCTGCGCGT
      TCGCAGTCTG GGGCATCTTT TCTAGTTTCC TAGAAGAACT CTAGGAAAAA AAGACGCGCA

4981  AATCTGCTGC TTGCAAACAA AAAAACCACC GCTACCAGCG GTGGTTTGTT TGCCGGATCA
      TTAGACGACG AACGTTTGTT TTTTTGGTGG CGATGGTCGC CACCAAACAA ACGGCCTAGT

5041  AGAGCTACCA ACTCTTTTTC CGAAGGTAAC TGGCTTCAGC AGAGCGCAGA TACCAAATAC
      TCTCGATGGT TGAGAAAAAG GCTTCCATTG ACCGAAGTCG TCTCGCGTCT ATGGTTTATG

5101  TGTCCTTCTA GTGTAGCCGT AGTTAGGCCA CCACTTCAAG AACTCTGTAG CACCGCCTAC
      ACAGGAAGAT CACATCGGCA TCAATCCGGT GGTGAAGTTC TTGAGACATC GTGGCGGATG

5161  ATACCTCGCT CTGCTAATCC TGTTACCAGT GGCTGCTGCC AGTGGCGATA AGTCGTGTCT
      TATGGAGCGA GACGATTAGG ACAATGGTCA CCGACGACGG TCACCGCTAT TCAGCACAGA

5221  TACCGGGTTG GACTCAAGAC GATAGTTACC GGATAAGGCG CAGCGGTCGG GCTGAACGGG
      ATGGCCCAAC CTGAGTTCTG CTATCAATGG CCTATTCCGC GTCGCCAGCC CGACTTGCCC

5281  GGGTTCGTGC ACACAGCCCA GCTTGGAGCG AACGACCTAC ACCGAACTGA GATACCTACA
      CCCAAGCACG TGTGTCGGGT CGAACCTCGC TTGCTGGATG TGGCTTGACT CTATGGATGT

5341  GCGTGAGCTA TGAGAAAGCG CCACGCTTCC CGAAGGGAGA AAGGCGGACA GGTATCCGGT
      CGCACTCGAT ACTCTTTCGC GGTGCGAAGG GCTTCCCTCT TTCCGCCTGT CCATAGGCCA

5401  AAGCGGCAGG GTCGGAACAG GAGAGCGCAC GAGGGAGCTT CCAGGGGGAA ACGCCTGGTA
      TTCGCCGTCC CAGCCTTGTC CTCTCGCGTG CTCCCTCGAA GGTCCCCCTT TGCGGACCAT

5461  TCTTTATAGT CCTGTCGGGT TTCGCCACCT CTGACTTGAG CGTCGATTTT TGTGATGCTC
      AGAAATATCA GGACAGCCCA AAGCGGTGGA GACTGAACTC GCAGCTAAAA ACACTACGAG

5521  GTCAGGGGGG CGGAGCCTAT GGAAAAACGC CAGCAACGCG GCCTTTTTAC GGTTCCTGGC
      CAGTCCCCCC GCCTCGGATA CCTTTTTGCG GTCGTTGCGC CGGAAAAATG CCAAGGACCG
```

FIG. 17G

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5581  CTTTTGCTGG CCTTTTGCTC ACATGTTCTT TCCTGCGTTA TCCCCTGATT CTGTGGATAA
      GAAAACGACC GGAAAACGAG TGTACAAGAA AGGACGCAAT AGGGGACTAA GACACCTATT

5641  CCGTATTACC GCCTTTGAGT GAGCTGATAC CGCTCGCCGC AGCCGAACGA CCGAGCGCAG
      GGCATAATGG CGGAAACTCA CTCGACTATG GCGAGCGGCG TCGGCTTGCT GGCTCGCGTC

5701  CGAGTCAGTG AGCGAGGAAG CGGAAGAGCG CCTGATGCGG TATTTTCTCC TTACGCATCT
      GCTCAGTCAC TCGCTCCTTC GCCTTCTCGC GGACTACGCC ATAAAAGAGG AATGCGTAGA

5761  GTGCGGTATT TCACACCGCA TATGGTGCAC TCTCAGTACA ATCTGCTCTG ATGCCGCATA
      CACGCCATAA AGTGTGGCGT ATACCACGTG AGAGTCATGT TAGACGAGAC TACGGCGTAT

5821  GTTAAGCCAG TATACACTCC GCTATCGCTA CGTGACTGGG TCATGGCTGC GCCCCGACAC
      CAATTCGGTC ATATGTGAGG CGATAGCGAT GCACTGACCC AGTACCGACG CGGGGCTGTG

5881  CCGCCAACAC CCGCTGACGC GCCCTGACGG GCTTGTCTGC TCCCGGCATC CGCTTACAGA
      GGCGGTTGTG GGCGACTGCG CGGGACTGCC CGAACAGACG AGGGCCGTAG GCGAATGTCT

5941  CAAGCTGTGA CCGTCTCCGG GAGCTGCATG TGTCAGAGGT TTTCACCGTC ATCACCGAAA
      GTTCGACACT GGCAGAGGCC CTCGACGTAC ACAGTCTCCA AAAGTGGCAG TAGTGGCTTT

6001  CGCGCGAGGC AGCTGCGGTA AAGCTCATCA GCGTGGTCGT GAAGCGATTC ACAGATGTCT
      GCGCGCTCCG TCGACGCCAT TTCGAGTAGT CGCACCAGCA CTTCGCTAAG TGTCTACAGA

6061  GCCTGTTCAT CCGCGTCCAG CTCGTTGAGT TTCTCCAGAA GCGTTAATGT CTGGCTTCTG
      CGGACAAGTA GGCGCAGGTC GAGCAACTCA AAGAGGTCTT CGCAATTACA GACCGAAGAC

6121  ATAAAGCGGG CCATGTTAAG GGCGGTTTTT TCCTGTTTGG TCACTTGATG CCTCCGTGTA
      TATTTCGCCC GGTACAATTC CCGCCAAAAA AGGACAAACC AGTGAACTAC GGAGGCACAT

6181  AGGGGGAATT TCTGTTCATG GGGGTAATGA TACCGATGAA ACGAGAGAGG ATGCTCACGA
      TCCCCCTTAA AGACAAGTAC CCCCATTACT ATGGCTACTT TGCTCTCTCC TACGAGTGCT

6241  TACGGGTTAC TGATGATGAA CATGCCCGGT TACTGGAACG TTGTGAGGGT AAACAACTGG
      ATGCCCAATG ACTACTACTT GTACGGGCCA ATGACCTTGC AACACTCCCA TTTGTTGACC

6301  CGGTATGGAT GCGGCGGGAC CAGAGAAAAA TCACTCAGGG TCAATGCCAG CGCTTCGTTA
      GCCATACCTA CGCCGCCCTG GTCTCTTTTT AGTGAGTCCC AGTTACGGTC GCGAAGCAAT
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FIG. 17H

6361 ATACAGATGT AGGTGTTCCA CAGGGTAGCC AGCAGCATCC TGCGATGCAG ATCCGGAACA
TATGTCTACA TCCACAAGGT GTCCCATCGG TCGTCGTAGG ACGCTACGTC TAGGCCTTGT

6421 TAATGGTGCA GGGCGCTGAC TTCCGCGTTT CCAGACTTTA CGAAACACGG AAACCGAAGA
ATTACCACGT CCCGCGACTG AAGGCGCAAA GGTCTGAAAT GCTTTGTGCC TTTGGCTTCT

6481 CCATTCATGT TGTTGCTCAG GTCGCAGACG TTTTGCAGCA GCAGTCGCTT CACGTTCGCT
GGTAAGTACA ACAACGAGTC CAGCGTCTGC AAAACGTCGT CGTCAGCGAA GTGCAAGCGA

6541 CGCGTATCGG TGATTCATTC TGCTAACCAG TAAGGCAACC CCGCCAGCCT AGCCGGGTCC
GCGCATAGCC ACTAAGTAAG ACGATTGGTC ATTCCGTTGG GGCGGTCGGA TCGGCCCAGG

6501 TCAACGACAG GAGCACGATC ATGCGCACCC GTGGCCAGGA CCCAACGCTG CCCGAGATGC
AGTTGCTGTC CTCGTGCTAG TACGCGTGGG CACCGGTCCT GGGTTGCGAC GGGCTCTACG

6561 GCCGCGTGCG GCTGCTGGAG ATGGCGGACG CGATGGATAT GTTCTGCCAA GGGTTGGTTT
CGGCGCACGC CGACGACCTC TACCGCCTGC GCTACCTATA CAAGACGGTT CCCAACCAAA

6721 GCGCATTCAC AGTTCTCCGC AAGAATTGAT TGGCTCCAAT TCTTGGAGTG GTGAATCCGT
CGCGTAAGTG TCAAGAGGCG TTCTTAACTA ACCGAGGTTA AGAACCTCAC CACTTAGGCA

6781 TAGCGAGGTG CCGCCGGCTT CCATTCAGGT CGAGGTGGCC CGGCTCCATG CACCGCGACG
ATCGCTCCAC GGCGGCCGAA GGTAAGTCCA GCTCCACCGG GCCGAGGTAC GTGGCGCTGC

6841 CAACGCGGGG AGGCAGACAA GGTATAGGGC GGCGCCTACA ATCCATGCCA ACCCGTTCCA
GTTGCGCCCC TCCGTCTGTT CCATATCCCG CCGCGGATGT TAGGTACGGT TGGGCAAGGT

6901 TGTGCTCGCC GAGGCGGCAT AAATCGCCGT GACGATCAGC GGTCCAGTGA TCGAAGTTAG
ACACGAGCGG CTCCGCCGTA TTTAGCGGCA CTGCTAGTCG CCAGGTCACT AGCTTCAATC

6961 GCTGGTAAGA GCCGCGAGCG ATCCTTGAAG CTGTCCCTGA TGGTCGTCAT CTACCTGCCT
CGACCATTCT CGGCGCTCGC TAGGAACTTC GACAGGGACT ACCAGCAGTA GATGGACGGC

7021 GGACAGCATG GCCTGCAACG CGGGCATCCC GATGCCGCCG GAAGCGAGAA GAATCATAAT
CCTGTCGTAC CGGACGTTGC GCCCGTAGGG CTACGGCGGC CTTCGCTCTT CTTAGTATTA

7081 GGGGAAGGCC ATCCAGCCTC GCGTCGCGAA CGCCAGCAAG ACGTAGCCCA GCGCGTCGGC
CCCCTTCCGG TAGGTCGGAG CGCAGCGCTT GCGGTCGTTC TGCATCGGGT CGCGCAGCCG

7141 CGCCATGCCG GCGATAATGG CCTGCTTCTC GCCGAAACGT TTGGTGGCGG GACCAGTGAC
GCGGTACGGC CGCTATTACC GGACGAAGAG CGGCTTTGCA AACCACCGCC CTGGTCACTG

FIG. 17I

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7201  GAAGGCTTGA GCGAGGGCGT GCAAGATTCC GAATACCGCA AGCGACAGGC CGATCATCGT
      CTTCCGAACT CGCTCCCGCA CGTTCTAAGG CTTATGGCGT TCGCTGTCCG GCTAGTAGCA

7261  CGCGCTCCAG CGAAAGCGGT CCTCGCCGAA AATGACCCAG AGCGCTGCCG GCACCTGTCC
      GCGCGAGGTC GCTTTCGCCA GGAGCGGCTT TTACTGGGTC TCGCGACGGC CGTGGACAGG

7321  TACGAGTTGC ATGATAAAGA AGACAGTCAT AAGTGCGGCG ACGATAGTCA TGCCCCGCGC
      ATGCTCAACG TACTATTTCT TCTGTCAGTA TTCACGCCGC TGCTATCAGT ACGGGGCGCG

7381  CCACCGGAAG GAGCTGACTG GGTTGAAGGC TCTCAAGGGC ATCGGTCGAC GCTCTCCCTT
      GGTGGCCTTC CTCGACTGAC CCAACTTCCG AGAGTTCCCG TAGCCAGCTG CGAGAGGGAA

7441  ATGCGACTCC TGCATTAGGA AGCAGCCCAG TAGTAGGTTG AGGCCGTTGA GCACCGCCGC
      TACGCTGAGG ACGTAATCCT TCGTCGGGTC ATCATCCAAC TCCGGCAACT CGTGGCGGCG

7501  CGCAAGGAAT GGTGCATGCA AGGAGATGGC GCCCAACAGT CCCCCGGCCA CGGGGCCTGC
      GCGTTCCTTA CCACGTACGT TCCTCTACCG CGGGTTGTCA GGGGGCCGGT GCCCCGGACG

7561  CACCATACCC ACGCCGAAAC AAGCGCTCAT GAGCCCGAAG TGGCGAGCCC GATCTTCCCC
      GTGGTATGGG TGCGGCTTTG TTCGCGAGTA CTCGGGCTTC ACCGCTCGGG CTAGAAGGGG

7621  ATCGGTGATG TCGGCGATAT AGGCGCCAGC AACCGCACCT GTGGCGCCGG TGATGCCGGC
      TAGCCACTAC AGCCGCTATA TCCGCGGTCG TTGGCGTGGA CACCGCGGCC ACTACGGCCG

7681  CACGATGCGT CCGGCGTAGA GCGCCACAGG ACGGGTGTGG TCGCCATGAT CGCGTAGTCG
      GTGCTACGCA GGCCGCATCT CGCGGTGTCC TGCCCACACC AGCGGTACTA GCGCATCAGC

7741  ATAGTGGCTC CAAGTAGCGA AGCGAGCAGG ACTGGGCGGC GGCCAAAGCG GTCGGACAGT
      TATCACCGAG GTTCATCGCT TCGCTCGTCC TGACCCGCCG CCGGTTTCGC CAGCCTGTCA

7801  GCTCCGAGAA CGGGTGCGCA TAGAAATTGC ATCAACGCAT ATAGCGCTAG CAGCACGCCA
      CGAGGCTCTT GCCCACGCGT ATCTTTAACG TAGTTGCGTA TATCGCGATC GTCGTGCGGT

7861  TAGTGACTGG CGATGCTGTC GGAATGGACG ATATCCCGCA AGAGGCCCGG CAGTACCGGC
      ATCACTGACC GCTACGACAG CCTTACCTGC TATAGGGCGT TCTCCGGGCC GTCATGGCCG

7921  ATAACCAAGC CTATGCCTAC AGCATCCAGG GTGACGGTGC CGAGGATGAC GATGAGCGCA
      TATTGGTTCG GATACGGATG TCGTAGGTCC CACTGCCACG GCTCCTACTG CTACTCGCGT

7981  TTGTTAGATT TCATACACGG TGCCTGACTG CGTTAGCAAT TTAACTGTGA TAAACTACCG
      AACAATCTAA AGTATGTGCC ACGGACTGAC GCAATCGTTA AATTGACACT ATTTGATGGC

7041  CATTA
      GTAAT
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FIG. 17J